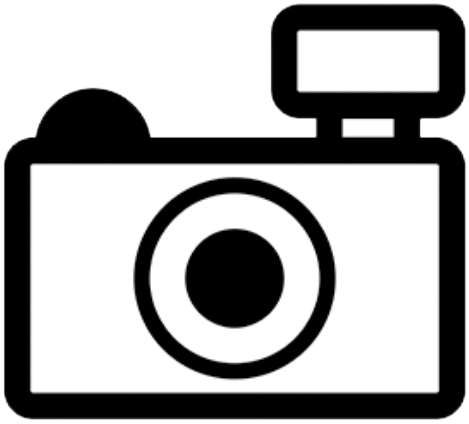
Cambeva zonata (a catfish, no common name)

Ecological Risk Screening Summary

U.S. Fish and Wildlife Service, January 2017
Revised, April 2018
Web Version, 11/26/2019



1 Native Range and Status in the United States

Native Range

From Froese and Pauly (2018):

"South America: coastal rivers between Santa Catarina and São Paulo, Brazil."

Status in the United States

This species has not been reported as introduced or established in the United States. There is no indication that this species is in trade in the United States.

From Arizona Secretary of State (2006):

"Fish listed below are restricted live wildlife [in Arizona] as defined in R12-4-401. […] South American parasitic catfish, all species of the family Trichomycteridae and Cetopsidae […]"

From Dill and Cordone (1997):

"[…] At the present time, 22 families of bony and cartilaginous fishes are listed [as prohibited in California], e.g. all parasitic catfishes (family Trichomycteridae) […]"

From FFWCC (2019):

"Nonnative Conditional species (formerly referred to as restricted species) and Prohibited species are considered to be dangerous to Florida's native species and habitats or could pose threats to the health and welfare of the people of Florida. These species are not allowed to be personally possessed, but can be imported and possessed by permit for research or public exhibition; Conditional species may also be possessed by permit for commercial sales. Facilities where Conditional or Prohibited species are held must meet certain biosecurity criteria to prevent escape."

Cambeva zonata (as *Trichomycterus zonatus*) is listed as a Prohibited species in Florida.

From Louisiana House of Representatives Database (2010):

"No person, firm, or corporation shall at any time possess, sell, or cause to be transported into this state [Louisiana] by any other person, firm, or corporation, without first obtaining the written permission of the secretary of the Department of Wildlife and Fisheries, any of the following species of fish: […] all members of the families […] *Trichomycteridae* (pencil catfishes) […]"

From Mississippi Secretary of State (2019):

"All species of the following animals and plants have been determined to be detrimental to the State's native resources and further sales or distribution are prohibited in Mississippi. No person shall import, sell, possess, transport, release or cause to be released into the waters of the state any of the following aquatic species or hybrids thereof.
[The list includes all species of] Family Trichomycteridae"

From Legislative Council Bureau (2018):

"Except as otherwise provided in this section and NAC [Nevada Administrative Code] 504.486, the importation, transportation or possession of the following species of live wildlife or hybrids thereof, including viable embryos or gametes, is prohibited [in Nevada]: […]
All species in the families Cetopsidae and Trichomycteridae"

From Utah DNR (2012):

"All species of fish listed in Subsections (2) through (30) are classified [in Utah] as prohibited for collection, importation and possession […]
Parasitic catfish (candiru, carnero) family Trichomycteridae (All species)"

Means of Introductions in the United States

This species has not been reported in the United States.

Remarks

From Katz et al. (2018):

"*Trichomycterus* comprises about 170 valid species, but its monophyly has been challenged in the last decades. […] *Cambeva* **gen. n.** is distinguished from all other trichomycterines by the presence of a bony flap on the channel of the maxillo-dentary ligament, the interopercle shorter than the opercle, a deep constriction on the basal portion of the antero-dorsal arm of the quadrate, absence of teeth in the coronoid process of the dentary, the maxilla shorter than the premaxilla, the cranial fontanel extending from the the [*sic*] medial posterior of frontal to the medial region of supraoccipital, and absence of the postorbital process of the sphenotic-prootic-pterosphenoid."

"**Included species**
[…] *Cambeva zonata* (Eigenmann, 1918) […]"

Both the former scientific name, *Trichomycterus zonatus*, and the current valid scientific name, *Cambeva zonata*, were used to search for information for this report.

2 Biology and Ecology

Taxonomic Hierarchy and Taxonomic Standing

From ITIS (2017):

"Kingdom Animalia
Subkingdom Bilateria
Infrakingdom Deuterostomia
Phylum Chordata
Subphylum Vertebrata
Infraphylum Gnathostomata
Superclass Osteichthyes
Class Actinopterygii
Subclass Neopterygii
Infraclass Teleostei
Superorder Ostariophysi
Order Siluriformes
Family Trichomycteridae
Subfamily Trichomycterinae
Genus *Trichomycterus*
Species *Trichomycterus zonatus* (Eigenmann, 1918)"

From Fricke et al. (2019):

"**Current status:** Valid as *Cambeva zonata* (Eigenmann 1918). Trichomycteridae: Trichomycterinae."

Size, Weight, and Age Range

From Froese and Pauly (2018):

"Max length : 6.2 cm male/unsexed [de Pínna and Wosiacki 2003]"

Environment

From Froese and Pauly (2018):

"Freshwater; benthopelagic."

Climate/Range

From Froese and Pauly (2018):

"Tropical, preferred ?"

Distribution Outside the United States

Native

From Froese and Pauly (2018):

"South America: coastal rivers between Santa Catarina and São Paulo, Brazil."

Introduced

This species has not been reported beyond its native range.

Means of Introduction Outside the United States

This species has not been reported beyond its native range.

Short Description

From Bockmann and Sazima (2004):

"[…] *T. zonatus* (Eigenmann) has large, irregular blotches arranged in dorsal, laterodorsal, lateral, and ventrolateral rows, vertically coalescent in bars."

See also Remarks in Section 1.

Biology
From Teschima et al. (2015):

"[…] *Trichomycterus zonatus* (Siluriformes: Trichomyctheridae), are also rheophilic, i.e. related to riffles, and […] are invertivorous active during the daytime [Braga and Gomiero, 2009]."

Human Uses
None reported.

Diseases
No OIE-reportable diseases (OIE 2019) have been documented for this species. No additional information available.

Threat to Humans
From Froese and Pauly (2018):

"Harmless"

3 Impacts of Introductions
This species has not been reported beyond its native range.

The importation, possession, or trade of the parasitic catfish *C. zonata* is prohibited or restricted in the following states: Arizona (Arizona Secretary of State 2006), California (Dill and Cordone 1997), Florida (FFWCC 2019), Louisiana (Louisiana House of Representatives Database 2010), Mississippi (Mississippi Secretary of State 2019), Nevada (Legislative Council Bureau 2018), and Utah (Utah DNR 2012).

4 Global Distribution

Figure 1. Known global distribution of *Cambeva zonata*, reported from Brazil. Map from GBIF Secretariat (2019; as *Trichomycterus zonatus*). The three northernmost points were excluded from the climate matching analysis because of issues with the coordinate data.

5 Distribution Within the United States

This species has not been reported in the United States.

6 Climate Matching

Summary of Climate Matching Analysis

The climate score (Sanders et al. 2018; 16 climate variables; Euclidean Distance) for *Cambeva zonata* within the contiguous United States is 0.024, indicating a medium overall climate match. (Scores between 0.005 and 0.103 are classified as medium.) Locally, Florida, Georgia and South Carolina had high climate scores; Texas had a medium climate score; and all other states had a low climate score. There was a high match along the coast of South Carolina and Georgia, throughout Florida (except the panhandle), and along the Texas coast from approximately Corpus Christi to Houston. There was a medium match along the rest of the coast from New Jersey to Texas, with some medium matches inland in the Southeast. The rest of the contiguous United States had a low match.

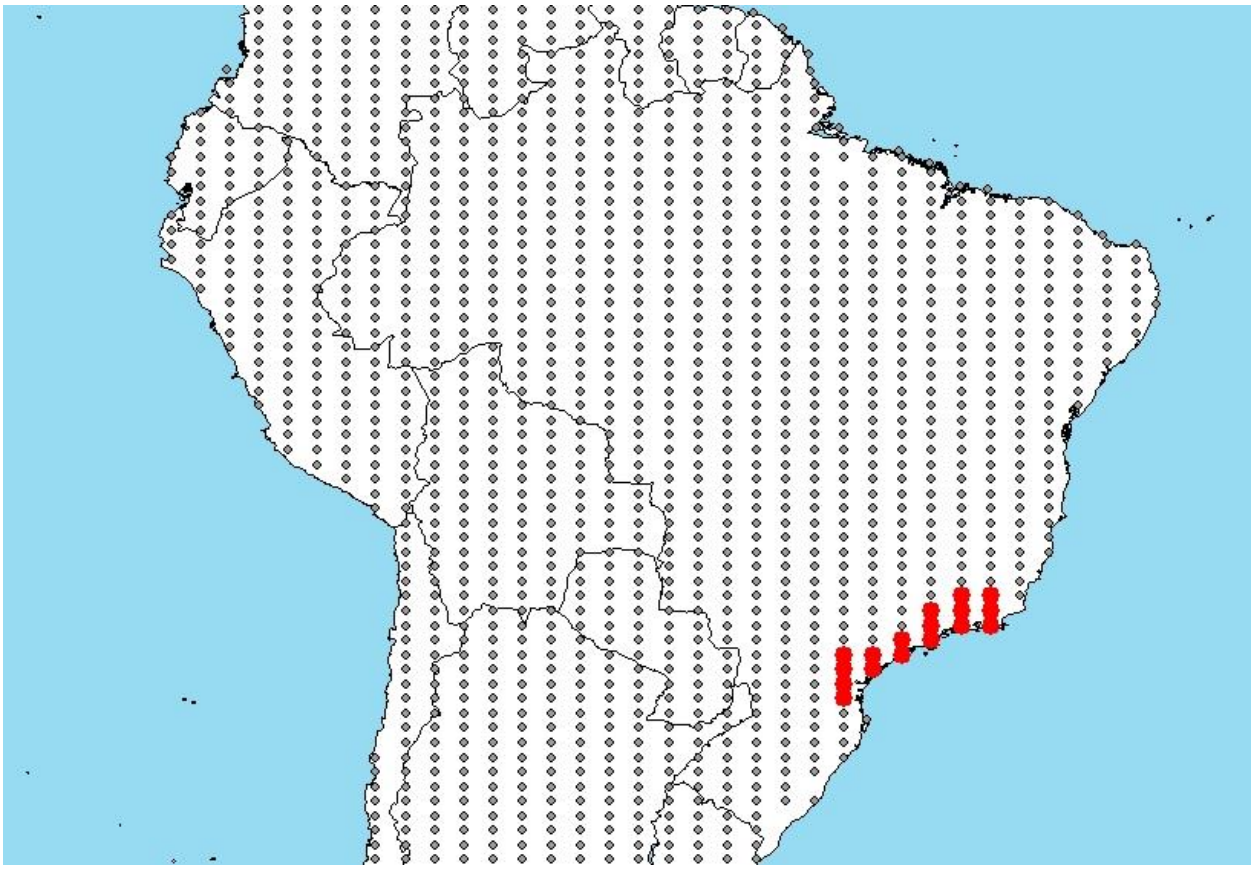


Figure 2. RAMP (Sanders et al. 2018) source map showing weather stations selected as source locations (red; Brazil) and non-source locations (gray) for *Cambeva zonata* climate matching. Source locations from GBIF Secretariat (2019; as *Trichomycterus zonatus*).

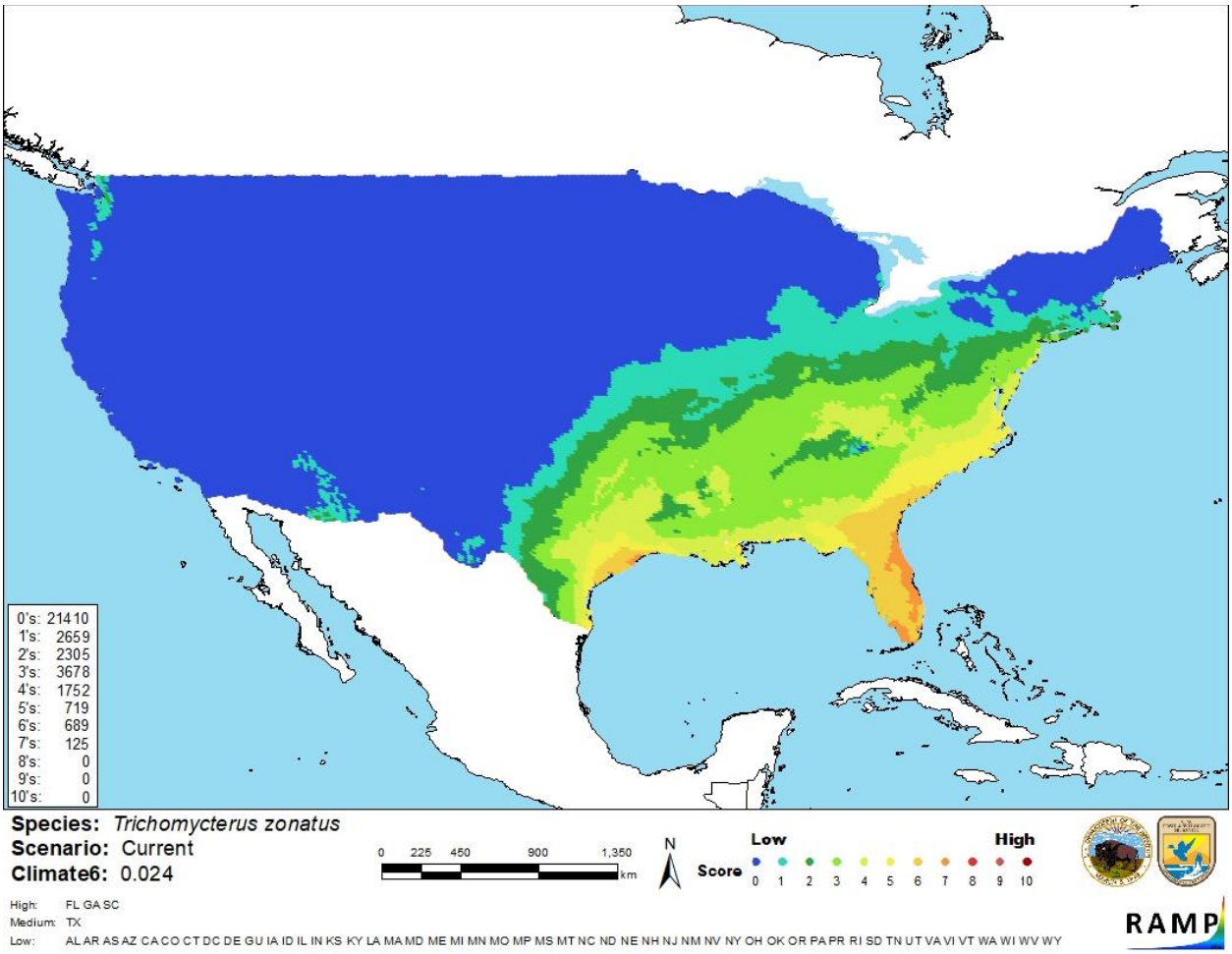


Figure 3. Map of RAMP (Sanders et al. 2018) climate matches for *Cambeva zonata* in the contiguous United States based on source locations reported by GBIF Secretariat (2019; as *Trichomycterus zonatus*). 0 = Lowest match, 10 = Highest match.

The "High", "Medium", and "Low" climate match categories are based on the following table:

Climate 6: Proportion of (Sum of Climate Scores 6-10) / (Sum of total Climate Scores)	Climate Match Category
0.000≤X≤0.005	Low
0.005<X<0.103	Medium
≥0.103	High

7 Certainty of Assessment

There is little information available on the biology and ecology of *Cambeva zonata*. No introductions of *C. zonata* have been reported, so there is no information available on impacts of introduction. Certainty of this assessment is low.

8 Risk Assessment

Summary of Risk to the Contiguous United States

Cambeva zonata is a catfish native to coastal rivers between Santa Catarina and São Paulo, Brazil. There are no reports of introduction outside the native range, and more research is needed to better understand potential impacts of introduction of this species. History of invasiveness is uncertain. Several U.S. States prohibit or restrict the possession, transport, or trade of this species along with other members of the family Trichomycteridae. *C. zonata* has a medium climate match within the contiguous United States, with highest match areas in southeastern Texas and peninsular Florida. Certainty of assessment is low due to lack of information. Overall risk assessment category for this species is uncertain.

Assessment Elements

- **History of Invasiveness (Sec. 3): Uncertain**
- **Climate Match (Sec. 6): Medium**
- **Certainty of Assessment (Sec. 7): Low**
- **Overall Risk Assessment Category: Uncertain**

9 References

Note: The following references were accessed for this ERSS. References cited within quoted text but not accessed are included below in Section 10.

Arizona Secretary of State. 2006. Restricted live wildlife. Arizona Administrative Code, R12-4-406.

Bockmann, F. A., and I. Sazima. 2004. *Trichomycterus maracaya*, a new catfish from the upper rio Paraná, southeastern Brazil (Siluriformes: Trichomycteridae), with notes on the *T. brasiliensis* species-complex. Neotropical Ichthyology 2(2):61-74.

Dill, W. A., and A. J. Cordone. 1997. History and status of introduced fishes in California, 1871-1996. California Department of Fish and Game. Fish Bulletin 178.

FFWCC (Florida Fish and Wildlife Conservation Commission). 2019. Florida's nonnative fish and wildlife. Florida Fish and Wildlife Conservation Commission, Tallahassee, Florida. Available: https://myfwc.com/wildlifehabitats/nonnatives/. (November 2019).

Fricke, R., W. N. Eschmeyer, and R. van der Laan, editors. 2019. Catalog of fishes: genera, species, references. Available: http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp. (November 2019).

Froese, R., and D. Pauly, editors. 2018. *Trichomycterus zonatus* Eigenmann, 1918. FishBase. Available: http://www.fishbase.org/summary/48754. (April 2018).

GBIF (Global Biodiversity Information Facility). 2019. GBIF backbone taxonomy: *Trichomycterus zonatus* Eigenmann, 1918. Global Biodiversity Information Facility, Copenhagen. Available: http://www.gbif.org/species/2343119. (November 2019).

ITIS (Integrated Taxonomic Information System). 2018. *Trichomycterus zonatus* (Eigenmann, 1918). Integrated Taxonomic Information System, Reston, Virginia. Available: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=682283&print_version=PRT&source=to_print#null. (April 2018).

Katz, A. M., M. A. Barbosa, J. L. O. Mattos, and W. J. E. M. Costa. 2018. Multigene analysis of the catfish genus *Trichomycterus* and description of a new South American trichomycterine genus (Siluriformes, Trichomycteridae). Zoosystematics and Evolution 94(2):557-566.

Legislative Council Bureau. 2018. Restrictions on importation, transportation and possession of certain species. Nevada Administrative Code, Section 503.110.

Louisiana House of Representatives Database. 2010. Exotic fish; importation, sale, and possession of certain exotic species prohibited; permit required; penalty. Louisiana Revised Statutes, Title 56, Section 319.

Mississippi Secretary of State. 2019. Guidelines for aquaculture activities. Mississippi Administrative Code, Title 2, Part 1, Subpart 4, Chapter 11. Regulatory and Enforcement Division, Office of the Mississippi Secretary of State, Jackson, Mississippi.

OIE (World Organisation for Animal Health). 2019. OIE-listed diseases, infections and infestations in force in 2019. World Organisation for Animal Health, Paris. Available: http://www.oie.int/animal-health-in-the-world/oie-listed-diseases-2019/. (August 2019).

Sanders, S., C. Castiglione, and M. Hoff. 2014. Risk Assessment Mapping Program: RAMP. U.S. Fish and Wildlife Service.

Teshima, F. A., F. C. Ferreira, and M. Cetra. 2015. Rarity status of endemic and vulnerable fish species in a Brazilian Atlantic Forest protected area. Natureza and Conservaçã. 13:67-73.

Utah DNR. 2012. R657-3 – collection, importation, transportation, and possession of animals. Utah Division of Natural Resources, Salt Lake City, Utah. Available: https://wildlife.utah.gov/hunting-in-utah/guidebooks/46-rules/rules-regulations/940-r657-3--collection-importation-transportation-and-possession-of-animals.html. (May 2018).

10 References Quoted But Not Accessed

Note: The following references are cited within quoted text within this ERSS, but were not accessed for its preparation. They are included here to provide the reader with more information.

de Pínna, M. C. C., and W. Wosiacki. 2003. Trichomycteridae (pencil or parasitic catfishes). Pages 270-290 *in* R. E. Reis, S. O. Kullander and C. J. Ferraris, Jr., editors. Checklist of the Freshwater Fishes of South and Central America. EDIPUCRS, Porto Alegre, Brazil.